

Precipitation.—The average precipitation was 2.49 above the normal; greatest monthly, 7.92, at Tenafly; least monthly, 4.14, at Imlaystown.

Wind.—Prevailing direction, northwest.—*E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.*

NEW YORK.

Temperature.—The mean temperature was above the normal at nearly all stations in the central lake region, and at New York City, Setauket, Canton, North Hammond, Plattsburgh, Palermo, Rochester, and Humphrey; it was generally below the normal in the regions of the Hudson and Mohawk valleys, the central plateau, and the great lake region; maximum, 74, at Fort Wadsworth, 12th; minimum, —21, at Queensbury, 7th.

Precipitation.—The rainfall was generally above the average, excepting along Lakes Erie and Ontario, and in the Saint Lawrence Valley, where deficiencies were reported; greatest monthly, 7.23, at Fort Schuyler; least monthly, 0.94, at Lyons. The greatest monthly snowfall, 28.5, was reported from Brookfield.

Wind.—Prevailing direction, northwest.—*Prof. E. A. Fuertes, Ithaca, director; I. W. Brewer, Private, Signal Corps, assistant.*

NORTH CAROLINA.

Temperature.—The monthly mean temperature was about normal; highest monthly mean, 53.6, at Southport and New Berne; lowest monthly mean, 39.6, at Highlands; maximum, 82, at New Berne, 22d; minimum, 4, at Highlands, 16th; greatest local monthly range, 64, at Willeyton, Douglas, Franklin, and Highlands; least local monthly range, 46, at Hatteras.

Precipitation.—The precipitation was 2.00 below the normal, but well distributed; greatest monthly, 7.82, at Highlands; least monthly, 1.50, at Wilmington.

Wind.—Prevailing direction, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Sergeant, Signal Corps, assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean temperature was about normal; highest monthly mean, 83.6, at Oelrichs, S. Dak.; lowest monthly mean, 12.7, at Gallatin, N. Dak.; maximum, 69, at Oelrichs and Fort Sully, S. Dak., 23d; minimum, —36, at Sanborn, N. Dak., 3d, and at Gallatin, N. Dak., 5th; greatest local monthly range, 81, at Fort Buford, N. Dak.; least local monthly range, 63, at Yankton, S. Dak.

Precipitation.—The average was about 0.10 below the normal; greatest monthly, 2.80, at Canton, S. Dak.; least monthly, 0.03, at De Smet, S. Dak.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Sergeant, Signal Corps, Huron, S. Dak., in charge.*

OHIO.

Temperature.—The mean temperature was 1.4 below the average; maximum, 69, at Hanging Rock, 11th, and at Pomeroy, 14th; minimum, —4, at Jefferson, 7th; greatest daily range, 87, at Lewisburgh, 9th; least daily range, 8, at Cleveland, 2d, and at Columbus and Ohio State University, 81st.

Precipitation.—The mean for the state was 2.56 above the average; greatest monthly, 9.58, at Wapakoneta; least monthly 1.56, at Toledo.

Wind.—Prevailing direction, northwest.—*Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Corporal, Signal Corps, assistant.*

OREGON.

Temperature.—The cool weather of the past few months continues; the mean temperature was 2.8 below the normal; highest monthly mean 48.3, at Bandon; lowest monthly mean, 35.6, at Burns; maximum, 71, at Toledo, Hubbard, and Grant's Pass, 14th; minimum, —8, at Lone Rock, 1st.

Precipitation.—The average was 0.60 above the normal; along the Columbia River from Portland to the Ocean it was about or below the normal, in other parts of the state it was generally slightly above the normal. Snow to a depth of from trace to four inches fell in western Oregon, and from trace to fifteen inches in eastern Oregon; at the close of the month there was no snow on the ground, except in the mountains and thickly wooded districts.

Wind.—Prevailing direction, southwest.—*Hon. H. E. Hayes, Master State Grange, Oswego, director; B. S. Pague, Sergeant, Signal Corps, assistant.*

PENNSYLVANIA.

Temperature.—The mean temperature was 5.6 below that of the corresponding month of 1889, and 2.5 below the normal; highest monthly mean, 38.8, at Philadelphia; lowest monthly mean, 26.3, at Eagle's Mere; maximum, 76, at Coatsville, Lancaster, Centre Valley, Annville, and Pottstown, 12th; minimum —16, at Blue Knob and Columbus, 7th; greatest local monthly range, 23.5, at Charlesville; least local monthly range, 11.9, at Ringersburgh and Eagle's Mere; greatest daily range, 59, at Charlesville, 12th; least daily range, 1, at Petersburgh, 18th.

Precipitation.—The average precipitation was 2.00 above the normal; greatest monthly, 8.31, at Quakertown; least monthly, 2.90, at Altoona.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

Temperature.—The mean temperature was lower than for any other month since March, 1889; highest monthly mean, 57.2, at Hardeeville; lowest monthly mean, 45.1, at Evergreen; maximum, 86, at Hardeeville, 22d; minimum, 11, at Spartanburgh, 3d; greatest local monthly range, 65, at Spartanburgh; least local monthly range, 43, at Walballa.

Precipitation.—Though the precipitation was less than the average, yet it was not deficient enough to do any apparent harm; greatest monthly, 5.10, at Aiken; least monthly, 1.85, at Winnsborough.

Wind.—Prevailing direction, southwest.—*Hon. A. P. Butler, Columbia, director; J. W. Cronk, Private, Signal Corps, assistant.*

TENNESSEE.

The meteorological features of March were the abnormally large rainfall, the low temperature on the 1st and 2d, the large percentage of cloudiness, and the high winds.

Temperature.—The mean temperature was a little below the normal for the past eight years; highest monthly mean, 50, at Savannah; lowest monthly mean, 41.2, at Rugby; maximum, 81, at Memphis, 27th; minimum, 10, at Trenton and Lynnville, 1st and 2d, respectively; greatest daily range, 40, at Springdale and Hohenwald, 17th and 29th, respectively; least daily range, 2, Rugby, Austin, Lewisburgh, Ashwood, and Savannah, 18th.

Precipitation.—The precipitation was nearly 8.00 in excess of the normal of the past eight years; greatest monthly, 10.29, at Clarksville; least monthly, 2.40, at Cog Hill.

Wind.—Prevailing directions, north.—*J. D. Plunket, M. D., Nashville, director; H. C. Rate, Signal Corps, assistant.*

NOTES AND EXTRACTS.

METEOROLOGICAL SUMMARY FOR HONOLULU, HAWAIIAN ISLANDS.

The following communication from Mr. Curtis J. Lyons, in charge of the weather service of the government survey, Hawaiian Islands, is of interest when considered in connection with the abnormal meteorological conditions over the greater part of the North American continent during the winter of 1889-1890:

As there has evidently been a good deal of discussion in American papers and scientific circles as to the cause or causes of the unusual weather of the past winter, I would present the fact that the weather in the Hawaiian Islands has also been different from the normal. The temperature for the month of January was 71°.85, Fahrenheit, and the normal temperature for that month is 70°. This is slight, it is true, but in no previous year since reliable averages have been obtained has it been within a degree, Fahrenheit, of this. The humidity at 9 a. m. was 79 per cent., as against probably 70 per cent. for the normal, and cloudiness, 6.6, as compared with 6. There has been hitherto an absence of the usual southwesterly storms, though this was as marked a year ago. The characteristics of the winter of 1888-1889 were as follows: An abnormal daily rise and fall of the barometer. The normal winter range, a. m. and p. m., is about .075 or .080, while during the winter referred to it was .085 or .090 some days, and even .14 was observed, the barometer rising again to the morning height at 9 p. m. Instead of the winds shifting around by the south into southwest, the direction shifted abruptly to west and northwest from northeast, sometimes as far as to southwest, and then back by the north. Long, low lines of cirro-stratus clouds prevailed in both seasons.

Mr. Lyons has also furnished the following summary of barometric record for twelve years at Honolulu, and in an accompanying communication makes the following remarks relative to barometric pressure at that place:

Observations taken from 1878 to 1877, inclusive, by Captain D. Smith; from 1888 to March, 1890, inclusive, by the Government Survey. The record represents the mean of the 9.30 a. m. and 3.30 p. m. observations, reduced to 32° Fahrenheit and sea-level.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average.
1873	30.08	30.07	30.09	30.08	30.05	30.05	30.05	30.06	30.00	30.03	30.04	30.01	30.051
1874	29.93	29.88	29.97	30.02	30.04	29.96	29.95	29.95	30.01	30.00	29.91	30.00	29.968
1875	29.96	29.91	30.02	30.02	30.04	29.97	29.96	29.95	29.94	29.97	29.95	30.00	29.974
1876	30.00	30.09	29.86	30.11	30.20	30.13	30.17	30.08	30.03	30.05	30.01	30.06	30.066
1877	30.03	30.08	30.05	30.12	30.09	30.13	30.13	30.11	30.10	30.05	30.11	30.08	30.092
1878	30.03	29.937	30.034	30.107	30.105	30.063	30.083	30.086	30.071	30.054	29.988	29.926	30.043
1884	30.041	29.957	30.079	30.032	30.075	30.008	30.061	30.064	30.130	30.027	30.051	29.902	30.044
1885	30.023	30.022	29.998	29.969	29.980	30.078	30.010	29.994	30.046	30.047	30.117	30.089	30.032
1886	30.003	30.045	30.101	30.126	30.147	30.148	30.073	30.089	30.054	30.071	30.078	30.083	30.085
1887	30.053	29.966	30.054	30.053	30.047	30.028	30.049	29.998	29.978	29.964	29.937	29.909	30.068
1888	29.905	29.996	30.063	30.063	30.056	30.064	30.060	30.069	29.997	29.991	30.020	30.069	30.019
1889	30.092	30.065	30.121	30.103	30.098	30.084	30.030	30.047	30.018	30.057	30.038	30.064	30.068
*	29.994	29.986	29.983	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*	30.014	30.001	30.037	30.067	30.074	30.066	30.051	30.036	30.031	30.029	30.022	30.021	30.038

* Average for 12 years, 1890 excepted.

The daily rise of the barometer from 5.30 to 9.30 a. m. I had already attributed, and I presume others have done the same—although I have never seen it so expressed—to the lateral pressure of air to the eastward, expanding with the heat of the approaching sun. The same appears in a marked degree in the monthly averages on the same principle, but on a different line, viz., of a least pressure in February, and a pressure rapidly increasing up to May, evidently from the approaching solar heat from the south advancing northward. From May to February the regularity of decrease is very marked. This has always seemed an interesting point or station for meteorological research, as being on the belt of trade-wind advance and retreat, so to say. The winters vary just as the trade-wind volume of the atmosphere crowds more or less to the north. I think that it enters under the westerly current of air like a wedge, i. e., the latter is low down near the sea-level say in March or April, and is lifted higher and higher as summer advances, till in July and August trades are prevalent even on the summits of Mauna Kea and Mauna Loa. In a westerly wind at only 1,500 to 2,000 feet elevation, I have looked down on trades blowing on the surface of the sea.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, March, 1890.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
Alabama.	o	o	o	In.	Arkansas—Cont'd.	o	o	o	In.
Bermuda ^{t.}	81	21	50.9	2.90	Harrisburgh	80	11	47.2	6.68
Butler	82	20	54.1	4.09	Heber	81	14	48.7	
Carrollton	77	20	52.5	9.67	Helena ⁽¹⁾ ^{t.}	.....	.....	7.47	
Citronelle	84	22	58.5	4.23	Hot Springs	14	.....	9.03	
Columbiana ^{t.}	80	17	51.9	6.17	Huntington	80	12	47.3	8.64
Decatur ^{(1) t.}	.....	.....	.....		Lead Hill	82	9	46.4	6.78
Decatur ^{(2) t.}	.....	.....	.....		Little Rock B'ks.	84	16	51.0	6.35
Double Springs	76	14	50.8	7.11	Newport ^{(1) t.}	.....	.....	8.59	
Elkmont	75	17	48.8	6.60	Oceola	78	15	48.2	6.76
Evergreen ^{t.}	.....	.....	0.92	Ozone ^{t.}	70	12	46.0	8.91	
Florence	74	18	49.0		Pine Bluff	78	18	54.7	5.10
Gadsden	77	18	49.3	5.75	Stuttgart ^{t.}	82	15	51.7	9.07
Greensborough	79	20	53.6		Texarkana	85	21	53.0	4.05
Guntersville	77	22	48.7	6.30	Washington ^{t.}	84	17	54.0	3.91
Jasper	78	23	55.0	6.07	Winslow ^{t.}	66	8	44.2	5.26
Livingston ⁽¹⁾	82	20	54.0	4.73	California.	.....	.....	.....
Mount Willing	80	22	54.0	4.73	Alcatraz Island	65	40	52.3	4.93
Mt. Vernon B'ks.	82	20	55.6	6.36	Almaden ^{t.}	76	37	54.3	3.74
Pine Applef.	.....	.....	3.71	Anahiem ^{t.}	78	14	59.6	0.78	
Selma ⁽¹⁾	80	26	52.0		Anderson	72	32	48.0	8.29
Tuscumbia ⁽¹⁾	75	19	56.0	6.79	Angel Island	72	36	52.1	4.87
Union Springs	70	20	55.7	2.81	Antioch	65	37	52.7	2.45
Uniontown	83	19	55.6	6.61	Aptos ^{t.}	73	32	53.6	3.16
Valley Head ^{t.}	74	10	46.2	6.98	Athlone	81	36	57.1	1.79
Wiggins	84	20	56.5	3.21	Auburn	72	34	48.7	8.08
Alaska.	.....	.....	.....	Bakersfield	77	36	56.7	0.24	
Juneau ^{t.}	46	10	31.4	5.89	Barstow ^{t.}	77	29	55.2	T.
Arizona.	.....	.....	.....	Beaumont	74	40	52.8	1.13	
Ash Creek	.....	.....	2.40	Belmont	70	37	51.2	.....
Ash Springs	38	56.0	0.17	Benicia Barracks	69	35	51.8	4.01	
Benson ^{t.}	83	32	59.6	0.00	Berendo	77	40	54.7	1.37
Bisbee	.....	.....	0.24	Berkley	68	38	50.7	4.74	
Buckeye	.....	1.70	.....	Bishop Creek	75	31	53.3	0.00	
Casa Grande ^{t.}	93	44	66.2	0.41	Boca	60	10	33.4	5.45
Chiri Cahua M't's	.....	.....	0.00	Borden	79	38	56.7	1.15	
Cooley's Springat	.....	1.25	.....	Boulder Creek	80	29	53.7	11.77	
Dragoon	.....	.....	0.00	Brentwood	73	42	61.9	2.32	
Dns Cabezos	.....	0.08	.....	Brighton	72	40	56.6	2.70	
Eagle Pass	24	45.3	.....	Bryon ^{t.}	70	38	54.9	2.16	
Flagstaff	61	2	36.6	2.30	Caliente	75	32	49.2	1.10
Florence	89	25	60.0	0.23	Castigota	72	30	50.0	9.16
Fort Apache	74	11	46.9	0.75	Castroville	71	37	53.2	1.89
Fort Bowie	76	21	54.8	0.00	Centreville	77	46	57.9	3.23
Fort Huachuca	23	.....	T.	Chico	72	36	51.5	5.65	
Fort Grant	76	20	53.8	0.46	Cisco	39	21	33.2	8.70
Fort Lowell	89	21	58.5	0.74	Colegrove	.....	0.68	.....
Fort McDowell	85	29	59.0	0.60	Colfax	64	32	46.8	14.70
Fort Mojave	85	37	58.7	0.76	Colton	84	38	59.1	0.50
Fort Verde	24	.....	1.35	Corning	78	30	52.9	4.56	
Gila Bend ^{t.}	80	42	64.0	0.00	Davisville	73	38	54.0	13.51
Holbrook	81	13	47.6	0.75	Delano	78	33	56.1	0.42
Lochiel ^{t.}	79	26	52.8	0.02	Delta	70	32	47.8	16.50
Maricopa ^{t.}	97	43	65.3	1.02	Downey	79	47	62.9	0.77
Mount Huachuca	88	26	57.8	0.03	Dunnigan	68	37	54.0	3.90
Natural Bridge	.....	.....	2.40	Edgewood	60	23	41.2	5.04	
Pantano ^{t.}	83	33	56.5	0.15	El Dorado	73	34	52.8	10.04
Phoenix ⁽²⁾	80	29	57.4	1.18	Elmira	75	40	54.9	5.26
Sachse's Ranch	.....	.....	0.10	El Verano	69	34	57.3	6.94	
San Carlos	90	23	57.0	0.88	Emigrant Gap	43	18	34.0	13.15
San Simon	90	35	60.0	0.00	Escalante	70	40	53.8	3.05
Show Low	.....	.....	4.50	Evergreen	.....	.....	1.95		
Signal ^{t.}	82	32	58.2	0.46	Farmington	80	35	53.8	1.78
Strawberry	.....	1.88	.....	Felton	79	32	53.4	10.00	
Texivion	.....	0.20	.....	Fernando	82	43	60.0	0.53	
Texas Hill	90	48	64.3	.....	Florence	85	49	61.8	.....
Tip Top ^{t.}	.....	3.41	.....	Folsom	75	40	54.1	6.36	
Tucson ^{(1) t.}	88	28	62.5	0.29	Fort Gaston	71	32	48.8	10.68
Tucson ^{(2) t.}	84	40	66.3	0.29	Fort Mason	65	40	52.5	4.76
Walnut Grove	.....	.....	1.95	Fresno	80	40	57.6	0.92	
Walnut Ranch	.....	.....	0.00	Fruto	70	34	52.9	3.28	
Wilcox ^{t.}	84	26	59.8	0.11	Gilroy	73	38	54.1	1.89
Yuma ^{t.}	85	50	66.3	0.00	Hydro	.....	.....	.....
Arkansas.	.....	.....	.....	Georgetown	65	29	45.5	14.70	
Arkansas City ^{t.}	.....	.....	6.88	Holbrook	70	34	52.9	1.18	
Camden ^{t.}	83	19	54.2	4.02	Holiday	68	30	54.8	0.46
Conway	82	19	50.8	10.46	Indio	64	40	54.0	0.00
Dallas	78	20	53.1	4.07	Ione	72	32	47.0	8.87
Dardanelle	.....	.....	7.30	Iowa Hill	69	31	45.9	14.12	
Forrest City ^{t.}	80	22	54.1	8.45	Jolon	70	41	51.2	2.50
Fultont	.....	.....	2.74	Julian	72	35	51.1	3.63	
Arkansas.	.....	.....	.....	Keene	70	32	49.4	1.08	
Arkansas City ^{t.}	.....	.....	.....	Kingsburgh	72	35	51.0	0.00	
Camden ^{t.}	83	19	54.2	4.02	King City	82	30	50.6	1.13
Conway	82	19	50.8	10.46	Knight's Landing	68	40	57.3	3.37
Dallas	78	20	53.1	4.07	La Grange	73	34	54.4	1.13
Dardanelle	.....	.....	7.30	Lathrop	73	40	54.7	1.67	
Forrest City ^{t.}	80	22	54.1	8.45	Laurel	75	37	54.1	0.00
Fultont	.....	.....	2.74	Lemore	78	34	57.2	0.51	
Arkansas.	.....	.....	.....	Lewis Creek	75	36	54.8	1.40	
Arkansas City ^{t.}	.....	.....	.....	Livernore	82	37	52.9	0.80	
Camden ^{t.}	83	19	54.2	4.02	Livingston	78	35	53.2	0.80
Conway	82	19	50.8	10.46	Loomis	.....	.....	5.88	
Dallas	78	20	53.1	4.07	Los Angeles	84	42	58.9	0.68
Dardanelle	.....	.....	7.30	Los Banos ⁽¹⁾	74	38	54.9	0.75	
Forrest City ^{t.}	80	22	54.1	8.45	Los Banos ⁽²⁾	74	36	54.1	0.74
Fultont	.....	.....	2.74	Los Gatos ⁽¹⁾	78	36	54.5	4.92	
Arkansas.	.....	.....	.....	Los Gatos ⁽²⁾	78	36	54.5	2.27	
Arkansas City ^{t.}	.....	.....	.....	Mammoth Tank	92	50	69.1	0.00	
Camden ^{t.}	83	19	54.2	4.02	Martinez	66	40	52.0	3.52
Conway	82	19	50.8	10.46	Marysville	70	40	55.8	6.71
Dallas	78	20	53.1	4.07	Mendocino	58	32	47.3	8.15
Dardanelle	.....	.....	7.30	Menlo Park	74	36	53.7	2.76	
Forrest City ^{t.}	80	22	54.1	8.45	Merced	75	38	56.4	1.01
Fultont	.....	.....	2.74	Modesto	70	31	50.2	0.88	
Arkansas.	.....	.....	.....	Mojave	78	34	52.5	0.00	
Arkansas City ^{t.}	.....	.....	.....	Montague	66	36	46.9	3.60	
Camden ^{t.}	83	19	54.2	4.02	Monterey	72	32	51.7	0.83
Conway	82	19	50.8	10.46	Napa	56	32	47.8	6.42
Dallas	78	20	53.1	4.07	Newhall	82	34	53.8	0.44
Dardanelle	.....	.....	7.30	Newark	68	38	55.4	2.27	
Forrest City ^{t.}	80	22	54.1	8.45	Newhall	82	34	53.8	0.44
Fultont	.....	.....	2.74	Oakland ⁽¹⁾	75	37	54.3	0.52	
Arkansas.	.....	.....	.....	Oakland ⁽²⁾	66	40	53.0	3.65	
Arkansas City ^{t.}	.....	.....	6.88	Oakland	70	31	52.2	0.18	
Camden ^{t.}	83	19	54.2	4.02	Oakland	70	31	52.2	0.18
Conway	82	19	50.8	10.46	Oakland	70	31	52.2	0.18
Dallas	78	20	53.1	4.07	Oakland	70	31	52.2	0.18
Dardanelle	.....	.....	7.30	Oakland	70	31	52.2	0.18	
Forrest City ^{t.}	80	22	54.1	8.45	Oakland	70	31	52.2	0.18
Fultont	.....	.....	2.74	Oakland	70	31	52.2	0.18	
Arkansas.	.....	.....	.....	Oakland	70	31	52.2	0.18	
Arkansas City ^{t.}	.....	.....	6.88	Oakland	70	31	52.2	0.18	
Camden ^{t.}	83	19	54.2	4.02	Oakland	70	31	52.2	0.18
Conway	82	19	50.8	10.46	Oakland	70	31	52.2	0.18
Dallas	78	20	53.1	4.07	Oakland	70	31	52.2	0.18
Dardanelle	.....							